

**Practice Questions for HL3**

**Demand**

The weekly demand for DVD hire in Pomtown is given as follows:

$$Q_d = 750 - 50P$$

Where  $Q_d$  represents the weekly demand and  $P$  is the price per DVD in Pommie dollars (\$).

- 1) Calculate the weekly demand for DVD hire if the price is
  - (a) \$5
  - (b) \$10
- 2) Calculate the price at which  $Q_d$  would be
  - (a) 650
  - (b) 150
- 3) From the equation, identify the horizontal intercept (where the demand curve would meet the horizontal axis) if the demand curve were to be plotted
- 4) At what price would there be no demand?
- 5) Explain the significance of the -ve sign in the equation.
- 6) Draw/plot the demand curve from the given equation (from  $P = 0$  to  $P = 15$ ).
- 7) As a result of increased downloading of movies, the weekly demand for DVD hire decreases by 320 at all prices. Describe the effect on the demand curve you have drawn.

The weekly demand changes (from the original) to  $Q_d = 750 - 75p$

- 8) Explain the effect of this change on the demand curve.
- 9) Suggest a possible reason for the change.

### Supply

The weekly demand for DVD hire in Pomtown is given as follows:

$$Q_s = 150 + 10P$$

Where  $Q_s$  represents the weekly supply and  $P$  is the price per DVD in Pommie dollars (\$)

- 10) Calculate the weekly supply of DVDs for hire if the price is
  - (a) \$5
  - (b) \$12
- 11) Calculate the price at which  $Q_s$  would be
  - (a) 350
  - (b) 200
- 12) From the equation, identify the horizontal intercept (where the supply curve would meet the horizontal axis) if the supply curve were to be plotted. Suggest why a DVD store might supply DVDs at a price of zero.
- 13) Explain the significance of the +ve sign in the equation.
- 14) Draw/plot the supply curve from the given equation (from  $P = 0$  to  $P = 15$ ).
- 15) As a result of increased costs, the weekly supply of DVDs for hire decreases by 40 at all prices. Describe the effect on the supply curve you have drawn.

The weekly supply changes (from the original) to  $Q_d = 150 + 15P$ :

- 16) Explain the effect of this change on the supply curve.
- 17) Suggest a possible reason for the change.

### Equilibrium

- 18) Calculate the equilibrium price and quantity from the (original) equations given above.
- 19) Calculate the excess demand or supply at a price of
  - (a) \$5
  - (b) \$15
- 20) Calculate the price which would lead to a surplus of 120 DVDs/week.

### Elasticity

- 21) Calculate the PED if a price increase of 20% causes the quantity demanded to fall by 25%.
- 22) If  $P = \$4$  and  $Q_d = 300$ , calculate the new  $Q_d$  resulting from a price increase to  $\$5$  if the  $PED = 1.5$ .
- 23) Calculate the PED using the equation/graph above ( $Q_d = 750 - 50P$ ) if price
- (a) increases from  $\$10$  to  $\$11$ ;
  - (b) decreases from  $\$10$  to  $\$9$ .
- 24) Explain whether the sign (+ve or -ve) of the co-efficient of elasticity is important.
- 25) Using your answers above to illustrate, explain why the gradient of the demand curve is not the same as the value of PED.
- 26) Using your answers above, explain why the PED varies along a straight line downward-sloping demand curve.
- 27) For Q22 above, calculate the change in total revenue as a result of the price increase.
- 28) If price falls and TR increases, what can be said about the PED?
- 29) If price increases and TR increases, what can be said about the PED?
- 30) If  $PED = 1$ , what will be the effect on TR of a fall in price of 6%?
- 31) If  $PED = 0$ , what will be the effect on TR of a price increase of 3.5%?
- 32) The price of good A increases by 12%, causing a fall in the  $Q_d$  of good B by 18%. Calculate the XED and comment on the relationship between goods A and B.
- 33) The price of good B falls from  $\$8$  to  $\$6$ , leading to an increase in the quantity of good C demanded, from 600 per week to 900 per week. calculate the XED and comment on your result.
- 34)  $P_a = \$5$ ,  $Q_{Db} = 400$  XED = -0.8. Calculate the change in the quantity of good B demanded if  $P_a$  increases to  $\$6$ .
- 35) Calculate the YED if an increase in income of 12% leads to an increase in the quantity demanded for good A of 9%. Comment on your result.
- 36)
- |       |        |        |
|-------|--------|--------|
|       | 2006   | 2007   |
| Y     | \$3500 | \$4200 |
| $Q_d$ | 300    | 500    |
- From the information above, calculate the YED and comment on your answer.

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- 37) Comment on the significance of the YED values for three products - good A has YED of 0.1, while good B has YED of -0.4 and good C has YED of 2.5.
- 38) Calculate the PES if a price increase of 20% causes the quantity supplied to increase by 16%.
- 39) If  $P = \$6$  and  $Q_s = 500$ , calculate the new  $Q_s$  resulting from a price increase to  $\$7$  if the  $PES = 0.6$ .
- 40) Calculate the PES using the equation/graph above ( $Q_s = 150 + 10P$ ) if price  
(a) increases from  $\$10$  to  $\$11$   
(b) decreases from  $\$10$  to  $\$9$
- 41) "When looking at a linear supply equation, it is possible to say immediately whether supply is elastic, inelastic or unitary. Explain how this is so.

### Tax incidence

In Pomtown (see Q9 above)  $Q_s = 150 + 10P$

An indirect tax of  $\$3$  per DVD is imposed on DVD hire. On the graph, draw the new supply curve (the equation is  $Q_s = 120 + 10P$ , but you should not need this).

42) Calculate the new equilibrium position and check via your graph.

43) Identify/calculate the following:

- change in price
- change in revenue per unit to the producer
- incidence per unit on the producer
- incidence per unit on the consumer
- change in consumer surplus
- change in producer surplus
- total incidence on consumers
- total incidence on producers
- change in revenue to producers
- change in consumer expenditure
- tax revenue

(It is possible, and may be useful, to complete the above exercises, using a subsidy of, e.g.  $\$2$  per DVD, instead of the indirect tax.)

Using the original demand and supply curves:

- 44) A ceiling price of  $\$5$  is imposed on DVD hire. Calculate the excess demand and change in consumer spending/producer revenue.
- 45) A floor price of  $\$14$  is imposed. Calculate the government expenditure which would be needed to purchase the surplus.

### Theory of the firm

46) Complete the table below

Output (Q)	Price per unit	Total revenue (TR)	Average revenue (AR)	Marginal revenue (MR)	Total cost (TC)	Total variable cost (TVC)	Marginal cost (MC)	Profit
4	30	120						
5	28	140		20	65	25	5	
6	26	156		16			8	
7		168			85		12	
8	21	168		0			18	
9	18			-6			25	
10	14	140		-12			32	
11		88		-52			40	

47) Determine the values for AVC and AC at each level of output. Plot AC, AVC, MC, AR and MR

48) Identify the following:

- profit-maximising level of output
- sales-maximising level of output
- break-even price
- shut-down price
- the maximum level of economic profit

### Economic activity

	\$billion
Govt spending on goods and services	600
Transfer payments	270
Gross investment	350
Exports	290
Income from employment	860
Taxation	430
Consumer spending	820
Imports	330
Net property income from abroad	-145
Saving	85

- 49) From the table above, calculate GDP and GNP.
- 50) From the information below, calculate the % change in real GDP from 2008 to 2009.

Year	GDP (\$b)	CPI
2008	840	165
2009	920	190

In Pommiestan, national income increases by \$4b. As a result:

- consumer spending (on all goods, including imports) increases by \$2.4b
- taxation increases by \$1.3b
- saving increases by \$0.3b
- imports increase by \$0.8b

- 51) Calculate the marginal propensities to consume, save, tax, import.
- 52) Calculate the value of the multiplier.
- 53) Calculate the effect on national income if investment increases by \$20b.
- 54) Calculate the additional government spending needed to increase national income by \$90b.
- 55) In Pommiestan, there are 80m people of working age. Of these, 90% are available for work, while 62m are currently employed. Calculate the rate of unemployment.
- 56) From the table below, construct a price index for Pommiestan for 2009 and 2010, using 2009 as the base year (=100) and use your results to calculate Pommiestan's rate of inflation from 2009 to 2010. Use the % of income spent on each product for the "weights"

Good	Average price in P\$ (2009)	Average price in P\$ (2010)	Percentage of income spent on each product
Bread	80c	\$1.00	30
Milk	\$4.00	\$6.00	15
Meat	\$2.40	\$4.00	20
Cabbage	60c	\$2.20	20
Chocolate	\$5.00	\$10.00	15

57) The following table gives the income tax rates for Pommiestan

Annual income (\$)	Income tax rate
0 - 20 000	15%
20 001 - 50 000	25%
50 001 - 100 000	40%
100 000+	50%

Calculate the annual tax payable by individuals earning

- (a) \$80 000
- (b) \$120 000
- (c) \$35 000

- and then calculate the average tax rate for each individual.

58) From your results, comment on the system of direct tax in Pommiestan.

59) In Pommiestan, indirect taxation is set at 20%. If individual (b) above spends \$60,000 per year, how much of this is indirect tax?

### Trade

60) The following information shows the possible output per worker per day of shoes and chairs in Country A and Country B

	A	B
Shoes	200	120
Chairs	400	300

Calculate the opportunity costs of producing shoes and chairs in each country.

61) Identify which country has a comparative advantage in shoes/chairs.

- 62) Suggest a rate of exchange (terms of trade) which would be acceptable to both countries.
- 63) If €1 = US\$1.35, calculate the value of US\$1 in Euros.
- 64) From the information in Q63 above, calculate the quantity of Euros which would be received in exchange for US\$640 (ignore commission).
- 65) Calculate the price in US\$ of a baseball cap which costs €17.
- 66) From the following information, prepare the Balance of Payments statement for Pommiestan:

	\$b
Imports of goods	640
Current transfers	65
Reserve assets	?
Exports of services	480
Exports of goods	580
Portfolio investment	(120)
Direct investment	50
Income	(120)
Transactions in non-produced, non-financial assets	(30)
Imports of services	445
Capital transfers	85

- 67) The following table gives import and export price indices for Pommiestan. Enter the terms of trade index for each year and state whether the terms of trade for Pommiestan have improved or deteriorated

Year	Import price index	Export price index	Terms of trade index	Improved / deteriorated
2006	100	100		N/A
2007	115	110		
2008	135	123		
2009	142	135		
2010	155	151		